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A Report on the Early Distribution and Sources of Walleye Stizostedion vitreum in Montana

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Montana Department of Fish, Wildlife and Parks

by

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Introduction

Walleye Stizostedion vitreum are found in the Missouri River drainage in Montana. The purpose of this report is to review references and professional opinions about when, where and how walleye became a member of Montana's fish fauna.

Glacial Era Watershed Connections in the Upper Missouri River System

The following brief summary on Pleistocene river drainage reconstructions was taken primarily from McPhail and Lindsey (1970), Cross, Mayden and Stewart (1986) and Crossman and McAllister (1986).

Geological evidence indicates that prior to the glaciations in the Pleistocene, the Missouri, Yellowstone, Little Missouri and other streams drained northward into Hudson Bay system. As the glaciers advanced, they interrupted the northern flow of waters from the upper Missouri River system and isolated fishes from the Hudson Bay region in an upper Missouri River refugium. Then as the glaciers retreated, they diverted the upper Missouri system eastward into the Mississippi River basin. Also during the last deglaciation, Lake Agassiz was formed which provided a connection between the Mississippi River and northwest waters in Canada.

Walleye Distribution in the Upper Missouri River Drainage during Glaciations

Walleye probably were not part of the glacial era fish fauna in the upper Missouri River refugium. Crossman and McAllister (1986) did not include walleye among the species believed to have survived and dispersed from the above refugium. Similarly, Cross, Mayden and Stewart (1986) reviewed information by Bailey and Allum (1962), McPhail and Lindsey (1970), Metcalf (1966) and Pflieger (1971) on fishes in the ancestral upper Missouri basin and found none listed walleye as a component. Lastly, Gerald Smith, a paleontologist at the University of Michigan, who has studied Pliocene and Pleistocene fish faunas throughout the west, knows of no fossils or Indian midden materials of walleye from the upper Missouri River basin (personal communication).

Post Glacial Distribution in the Missouri River System

Walleye apparently were not reported from the upper Missouri River basin during the 19th century. Evermann and Cox (1896) reviewed and commented upon the early literature on fishes in the Missouri River basin which consisted of 26 references covering the Lewis and Clark expedition (1803-1806) through the year 1894. They reported that 17 collections were made in Montana in the Missouri River basin below the Great Falls and in the lower Yellowstone River drainage (Table 1). Although sauger were taken in at least 5 collections, walleye were not reported from any of the Montana sites.

Table 1. Sampling sites for fish in Montana in the Missouri River basin below the Great Falls and in the lower Yellowstone River drainage during the 1800's (from Evermann and Cox 1896).

Sampling site	Reference
Missouri River Near Beauchamp Creek Near Marias River Falls of Missouri River Near Mouth of Tongue River	Coues 1893 (on Lewis and Clark expedition, 1803-1806)
Milk River Fort Union Falls of Missouri River	Girard 1858
Falls of Missouri River Milk River West of Fort Union	Suckley 1860
Five Forks of Milk River Headwaters of Milk River Sweet Grass Hills	Jordan 1878
Missouri River at Fort Benton Judith River	Cope 1879
Missouri River at Craig Poplar River	Eigenmann 1894

The reported populations of walleye nearest to Montana apparently were in the eastern sections of the Dakotas during the late 19th and early 20th centuries. In North Dakota, Woolman (1895) found walleye near the eastern border of the state and Hankinson (1929) extended its distribution only about 160 km westward to the James River. In South Dakota, walleye were reported from the Missouri River drainage near Chamberlain (Evermann and Cox 1896). Even later Leach (1928) reported the western extent of the walleye range was in the Dakotas. The one report of walleye from a site in the Powder River drainage in Wyoming (Evermann and Cox 1896) was probably a misidentification since Baxter and Simon (1970) considered walleye to be an introduced species in Wyoming.

The first list of Montana fishes was published early in the 20th century (Henshall 1906). Walleye were not included on this list either as a native or introduced species. The first reference to walleye in Montana appeared in Montana's First Biennial Report. The Montana Game and Fish Commission (1913-1914) reported "walleyed pike" were in the "St. Mary's Lakes". Although walleyed pike is a name that usually has been applied to walleye (Scott and Crossman 1973) it is doubtful that it does in this instance because walleye have not been reported since from the St. Mary River drainage in Montana (Schultz 1941; Brown 1962, 1971) or Canada (Paetz and Nelson 1970). Perhaps this citation to "walleyed pike" referred to what we now call northern pike Esox lucius which are present in the St. Mary River system (Schultz 1941; Brown 1962, 1971) but were not mentioned in the report.

The earliest seemingly valid reference to walleye or walleyed pike by the Commission was in the 1923-1924 Biennial Report in which Nelson Reservoir (Milk River drainage) was stated to contain great numbers of "Great Northern or Wall-eyed Pike". This report also refers to taking spawn from "Pike Perch" there. These comments are surprising since Nelson Reservoir only was closed in 1922. Pike perch and wall-eyed pike were names commonly applied to walleye (Scott and Crossman 1973).

The population of walleye in Nelson Reservoir does not appear to be native. As stated earlier, this area was glaciated during the Pleistocene and Crossman and McAllister (1986), and Cross, Mayden and Stewart (1986) in a review of the literature did not list walleye as a species likely to have been present in the Missouri River refugium. Neither are there known fossils of walleye in the area (Gerald Smith, personal communication). Jordan (1878) examined Coues' collections made from the Milk River and Sweet Grass Hills in 1874 and did not report walleye present. Furthermore, the nearest reported population of walleye in the 1920's was over 1100 km downstream in South Dakota (Hankinson 1929). Also more recently, Willock (1969) and Paetz and Nelson (1970) did not find walleye in the Canadian portion of the Milk River drainage.

Neither Montana nor Federal agencies appear to be responsible for the presumed introduction of walleye into Nelson Reservoir which provided the fishery referred to in the 1923-1924 Commission Report. I examined the fish distribution records in the Biennial Reports of the Montana Fish and Game Commission from

1913-1932 and saw no reference to the planting of walleye. I inspected the Report of the U. S. Commissioner of Fisheries from 1905-1929 (sans 1913, 1916 and 1918) and saw no evidence of walleye being planted into Montana from "fish cars", reared at Federal stations in Montana, nor traded or granted to Montana hatcheries. Therefore, walleye may have been introduced into Nelson Reservoir by a private individual or group. The transplanting of fish by individuals to suit their own wishes is mentioned in a later Biennial Report (Montana Fish and Game Commission 1931-1932).

Walleye were not reported from any location in Montana other than Nelson Reservoir prior to their first known introduction by public agencies in 1933. Montana obtained walleye eggs from Michigan in exchange for Arctic grayling eggs (Montana State Fish and Game Commission 1931-1932) and planted the resulting fish in the Missouri River below Great Falls in 1933 (Thurston Dotson, Montana Department of Fish, Wildlife and Parks, personal communication). Montana stocking records show walleye were planted in the Yellowstone, Tongue, and Milk rivers, Nelson and Pablo reservoirs, and Brownes Lake from 1934-1948 (Thurston Dotson, Montana Department of Fish, Wildlife and Parks, personal communication). It appears that all of the later plants were from stocks obtained from Minnesota and Ohio (Montana Fish and Game Commission 1946-1947, 1947-1948). The Pablo Reservoir plant is especially interesting because it represents the first known introduction of walleye west of the Continental Divide in Montana. The Montana Department of Fish and Game has since rehabilitated this reservoir to

eliminate those walleye (Arthur Whitney, retired Chief of Fisheries, Montana Fish and Game Department, personal communication).

Summary

The evidence strongly indicates walleye are not native to Montana. They were found in only one location (Nelson Reservoir) prior to known introductions of out of state stocks by the Montana Fish and Game Department. This population in Nelson Reservoir is not believed to be a relict surviving glaciations or the result of early post glacial invasion. When this population was first reported, its nearest known conspecific population was located downstream over 1100 km away. These factors suggested walleye were not indigenous to Montana. This conclusion that walleye were introduced into Montana agrees with the previous evaluation of Brown (1971).

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